

Doc : CS 071 Indice : rev A Year : 2018



Notes on handling and use of TECHNITRACE Heating cables.

Rules to respect

Rules

Don't **pinch** the heating cables during positioning (support brackets, insulating metal sleeve, flange).

Don't **overlay** two continuous power heating cables (type PCBT, PCHT) which may cause thermal inertia and regular overheating which in turn may result in product deterioration.

> self regulating heating cables CABT, CAMT, CAHT

> > 1

NO constant wattage heating cables PCBT, PCMT, PCHT



Don't **twist** the heating cable when rolling off the reel or put it on a hydraulic device(valve, pump, flange) which might cause heating and /or mechanical deterioration (dilation) and /or cause a short circuit.



independant heating system if necessary

2



Before insulation

After insulation

On plastic pipes (PVC PEHD) an earth wire must be used. The heating cable will be placed on a thermal dissipater (adhesive aluminium) and covered by a heating chamber(aluminium) in order to optimise the thermal transfer.





3

An insulation test of 1000V MUST be carried out on each circuit before heat insulation. This should be in the presence of an trained client manager. The trials undertaken should be noted on a reception form signed by both parties.



SUMMARY

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The black semiconductor plastic is traversed by the current and this is not an insulator. It is important to perfect its electrical insulation and this according to the assembly instructions of the manufacturer TECHNITRACE.

The resistive wire that constitues the heating element of the heating cables constant power is traversed by the current. It must imperatively be perfectly isolated and this in accordance with the instructions TECHNITRACE.

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NOTICES AND ADVISES FOR ELECTRIC HEATING INSTALLATION

Doc : CS 071 FILE : FIQ 071 Indice : REV A Year : 2003 Objectif of this document : this document defines the precautions and rules to be respected for the handling and the use of the heating cables in order to guarantee the continuity of the quality of the delivered products

LIGNE	Règles à respecter
1	Do not grip the heating cables at the time of their implementation (collar support of drain, flange sheet of the heat insulator, attaches)
2	Do not cross two heating cables of constant wattage cable type (PCBT, PCHT) under thermal risk of inertia and specific heating being able to involve a degradation of the product
3	Do not hore the heating cable during its installation on a hydraulic apparatus (valve, pump, attach) being likely to cause a thermal and/or mechanical degradation (dilation) and/or short circuit
4	Respect the thermal characteristics of the product (maximum temperature energized and not and mecanichal too (respects of the radius of curvature maximum 5D, and distances for dilations)
°G	On plastic pipes (PVC, REP,) it s is obsolutly necessary to use a braid for ground continuity. The heating cable will be fixed under an adhesive aluminium tape all around in order to obtain an optimal the thermal transfer.
9,	For heat losses compensation of the hydraulic apparatuses and for disassembling do 'compensation S' before and after the apparatus to heat trace. Take care about the possible pinchings or superpositions of the cables.
7	Make sure that the pipe or the apparatus on which the heating cable will be installed does not comprise asperities being likely to deteriorate insulation of the cable at the time of the operation or implementation (thermal dilations)
8	Unless otherwise specified, a regulation is always necessary using a surface or ambiant thermostat (exclusivly for freeze protection) in order to secure thermal drifts being able to cause local thermal degradations (static mode on a dead arm for example)
6	IMPERATIVELY do a dielectric test to control the insulation continuity of the cable under 1000V supply voltage of each circuit before thermal insulation and in the presence of a customer person. Consign the tests on a type-approval certificate duly signed by the parts.
10	Do the same tests after installation of the thermal insulation to ensure of the integrity of the insulation of the heating cables after those jobs.
11	Ensure that good section and good calibration breakers are used on each circuit according to the type of technology used (consult our services) and do not exceed the maximum lengths of circuits according to the product used (approximately 120m for the parallel heating cables technology)
12	Imperativly use a circuit breaker with a sensibility of 30mA in head of the installation (maximum 400m/breaker)
13	Protect and take care about degradation of the cables during the installation process against mechanical or thermal aggressions (splashes of weldings, wrenching)
14	Exclusively use the TECHNITRACE notices for the installation and the connection of the heating cables in order to carry out the heads and ends and following to the technology employed
The cust the tech	orner is only responsible for the use for which it intends the heating cable. Responsibility TECHNITRACE stops with the supply of a product in conformity wi nical specifications (mechanical and thermal) being reproduced on the chart of the product according to the respect of its internal check procedures quality. The







































































the insulating sheath around the cable . Feed on the different elements of the cable gland and strip the ends of the wires.



Feed on the P-CONNECT tube in the direction of the arrow. Connect the energy cable onto the connector in the correct terminal.



Cut the heating cable to the desired length and feed on the different elements of the cable gland.



Strip a maximum of 40mm off the outer covering of the heating cable.

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Cut the semi conductor heating element. Using generated hot air, soften and strip the two nickel plater copper energy conductors.

Note: the semi conductor, as its name indicates is not a total conductor, not a total insulator.

Step 6



Feed the two thermo retractable 3/1 sleeves onto the conductor wires using a hot air source to ensure their shrinkage.

Step 7

Step 8



Feed on the thermo-retractable sleeve 12/4 in a superimposed position. Use a hot air source to ensure shrinkage.

Connect the heating cable respecting the joint markings. **Close tube-P- CONNECT** in order to ensure a good seal.







Assembly instructions T - CONNECT

TECHNITRACE

Step 1



Cut the heating cables to the desired length and feed on the different elements of the cable gland.

Step 2



Step 3



Strip a maximum of 40mm from the primary insulating sheath.

Cut the semi-conductor heating element . Using generated hot air, soften and strip the two nickel plated copper energy conductors.

Note: the semi-conductor, as its name indicates is not a total conductor, nor a total insulator.

Step 4



Feed the thermo-retractable 3/1 insulated sleeves onto the conductor wires using a hot air source to ensure their shrinkage.

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Step 5



Feed on the 12/4 thermo-retractable sleeve in a superimposed position. Use a hot air source to ensure shrinkage.

Step 6



Step 7































C



























TECHNITRACE DO 097











Instruction manual of Technitrace heating cables



Edition 2019







Heating a hydraulic instrument.



The heating of a flange, a valve or a pump must have a thermic compensation zone (if overloading above the source , you should check below in the case of bigger instruments) allow for extra cable length which will facilitate the disassembly of the heater.



Spiral heating

Self Assembly is not advised because of the difficulties involved.



Because of the technical difficulties involved (the reel is sometimes bulky when passing over and under the pipe or when tubes are close to a support).

We can only advise not to do this except for in de-icing applications.

If the power is not sufficient,you should favor a double linear heater with two power sources.

Before starting any heater, take the following precautions and read CSO71 Carefully.

- Check that the cable is compatible with the conditions of use (thermal, mechanic, electric and chemical).

- Respect the assembly and installation instructions.

- Carry out insulation tests both before and after the insulation application.

- You MUST use a 30mA differential circuit breaker.



Assembly Instructions

The heating cable is the active element of an installation. Executing and using it correctly are the determining factors in achieving the results for which it has been designed.

It's important to take the utmost care during execution and respect the regulations (see implementation manual) as well as the handling advice and the use of heating cables (Technitrace document CS 071).

Rule N°1 Maintain the electric insulation of the heating cable

The outer covering of the heating cable is designed to protect the personnel against direct or indirect contact or accidental discharges.

When the heating cable is being positioned, it's important that it is not subject to any buckling or restrictions which might alter its qualities or damage its function, at the risk of creating an electric problem and destructive thermal consequences.

- Don't pinch the heating cable when using accessories (valves, sheaths, insulating covers).

- Instead of using wires or mounting brackets, use adhesive tape supplied by Technitrace (polyester POLY50, glass fiber FIV150 and aluminum ALU/BT and ALU/HT).

- Don't twist the heating cable on itself, either when unrolling, when placing on the pipework or on the hydraulic accessory.

- Make sure that the diffusion zones on which the heating cables are placed have no rough surfaces on which the heating cable can be damaged. The angle of curvature should in no case exceed 5 or 6 times the maximum diameter of the heating cable, depending on the product.

- Protect the heating cable from mechanical, chemical or thermal aggressions which might take place after positioning.



Rule N°2 conserving the thermal integrity of the heating cable

During normal operations the heating cable will be subjected to mechanical and thermal (dilations) limits. It is of primary importance to make sure that the installed heating cable is suited to purpose. The temperatures of use, limited and specified by Technitrace should be checked, so that they are never reached.

- Cable exposure limit live (plugged in).

- Cable exposure limit not charged (unplugged).

- Ensure that the installation has an adapted regulation system in order to prevent thermal fluctuations.

- Analyse the service conditions so as to be certain of staying imperatively and wholly under the allowed maximal thermal values (hydraulics, disued branches, service temperatures during cleaning or sterilization).

- Don't overlay two constant power heating cables, except when this is countermanded by the manufacturer, as a local thermal inertia may be produced.

- Make sure that the thermal dilations are compatible with the product (for info metal = 1mm/m/100°).

- Only Use an atmospheric thermometer as a protection against freezing with an advised freezing point of $\leq 5^{\circ}$ c.

Rule N°3 Ensure an adapted electric protection on the electric heating circuit

In heating cables the electrical protection of the electric heating circuits , must be carried out conforming to the updated norms(NFC 15100) and must include.

- A 30mA differential circuit breaker and mustn't go over 400m cable/differential circuit breaker because of circuit leakage.

- A thermal protection adapted by fuse or correctly calibrated circuit breaker, in order to ensure an efficient protection against energy pulses and short circuits.



It must take the type of heating cable and its length, into account.

- Don't install heating cables of over 120m in length because of potential reduction in tension in the energy cables as well as heating by the joule effect(RI2).
- You must do an electrical insulation test under 100V using an adapted insulation tester, BEFORE and AFTER installing the thermal insulation. No charge should be put through any section of the system until these tests have been done.

An incorrectly insulated cable can function perfectly for several months before the fault is seen. On plastic pipes and earth wire necessary as well as a continuous support of heating cables under a heating chamber made using aluminium type adhesive tape (ALU BT and ALU HT).

Rule N°4: respect the assembly and connection notices

Each heating cable technology has rules concerning its electrical connection and thus the assembly of the cable head and its extremity.

To this effect, Technitrace has put together connection kits and accessories, which have been specially studied and adapted for each family of product. It is important to :

- Use the Technitrace connection kit adapted to the installation.
- Scrupulously respect the supplied assembly notices.
- Respect Technitrace standards and assembly procedures

(See execution manual) and insulate electrically the heating cable extremities from humidity).

We strongly advise you to note the operations and tests on a paper and make acting individuals sign after each operation.

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See article : electrical Heating installation tests.



Connexion for surface thermostat THS



Connexion for ambiant thermostat THA







https://vimeo.com/user46871475/videos

http://www.technitrace.fr http://www.heating-cables.com

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